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ABSTRACT

A study examined the nature of functional literacy among 671 Moroccan children, aged 11-14, and the relationship of functional and classroom literacy to background factors and school experience. Students were assessed on a series of household literacy tasks sampling knowledge of spatial and monetary print conventions, specialized vocabulary, and ability to relate the written word to real-world contexts. The most difficult tasks involved spatial, monetary, and telegraphic text conventions. Correct responses were associated with grade level achieved and with remaining in school. Among younger children, cognitive level, reported home literacy activity, and urban environment were significant predictors of both household and school-type literacy. By contrast, predictors of household literacy differed considerably from those of school literacy among older children. Cognitive level, factual knowledge, and grade level attainment predicted both types of literacy, but urban residence, male gender, and home literacy activities appeared to play a greater role in fostering household literacy, while school dropout and age predicted school-type literacy only. The pattern of results indicates that knowledge of literacy conventions required for successful performance of common household literacy tasks may be acquired only partially, even after five years of formal schooling, and different pedagogical approaches may be required to promote development of each literacy type. (Author/MSE)

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FUNCTIONAL LITERACY IN MOROCCAN SCHOOL CHILDREN

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Abstract

FUNCTIONAL LITERACY IN MOROCCAN SCHOOL CHILDREN

Recent theory and research regarding "functional literacy" have been fostered by a growing concern that school-taught reading skills may not adequately equip individuals to successfully confront the tasks requiring literacy at home and in the workplace. The present study examined the nature of functional literacy among 671 Moroccan children and young adolescents living in a context of low parental literacy, and the relationship of functional literacy and school-type or classroom literacy to background factors and school experience. Children aged 11 to 14 were assessed on a series of household literacy tasks which sampled knowledge of spatial and monetary print conventions, specialized vocabulary, and ability to relate the written word to real-world contexts.

The most difficult tasks for children involved spatial, monetary, and telegraphic text conventions. Correct responses were associated with grade level achieved and with remaining in school. Among younger children, cognitive level, reported home literacy activity, and urban environment were significant predictors of both household and school-type literacy. By contrast, the predictors of household literacy differed considerably from those of school literacy among older children. Cognitive level, factual knowledge, and grade level attainment predicted both types of literacy, but urban residence, male gender, and home literacy activities appeared to play a greater role in fostering household literacy, while school dropout and age predicted school-type literacy only.

The pattern of results indicates that children's knowledge of literacy conventions required for the successful performance of common household literacy tasks may be acquired only partially, even after five years of formal schooling. Furthermore, the differential importance of specific background factors for household as contrasted with school-type literacy suggests that different pedagogical approaches may be required to promote the development of each type of literacy. Females, rural dwellers, and others with fewer opportunities to practice reading skills outside of school appear to be most at risk of "functional illiteracy" even if they attend school and even though they may be at little or no disadvantage with regard to school-type literacy skills. For such individuals, explicit instruction in functional literacy

knowledge and tasks early on in the school reading and writing curriculum may be useful, not only to aid in the development of the skills such tasks require but also to provide tangible examples of the real-world functions of literacy in the child's own environment.

Introduction

"Functional literacy" remains a little-challenged fixture in the rhetoric of basic education, adult literacy programs, and international development. Since World War II, national governments and international agencies have devoted substantial efforts to reducing rates of illiteracy (Unesco, 1976). While ambitious adult education programs have been attempted in some countries (Arnove & Graff, 1988), the major focus of literacy efforts has been on the creation and expansion of national school systems, with particular emphasis on increasing primary school enrollments. A central goal of extending education to large numbers of new students has been to provide them with at least a "functional" level of literacy, adequate for the performance of everyday, "survival" activities (Kirsch & Guthrie, 1977). In recent years, however, it has become evident that the literacy skills generally taught in schools differ importantly from the kinds of abilities and knowledge utilized in the performance of literacy tasks in everyday life (e.g., forms, letters, bills, instructions, packaging), and that schooling does not necessarily prepare students adequately to accomplish such tasks (Kirsch & Jungeblut, 1986; Resnick & Resnick, in press).

The present paper reports on a study of household and school-type literacy skills among Moroccan school children and young adolescents living in a context of low parental literacy. The study examines the nature and strength of household literacy skills in this population, and compares the relationship of household literacy to background variables and school experience with that of school-type literacy, as one of the first empirical studies to address similarities and differences in the nature and prediction of functional versus school-type literacy skills.

Defining and assessing functional literacy

Definitions of functional literacy, like those of literacy in general, have varied considerably across time and place, attesting to the complexity and context-specificity of the notion (Levine, 1982). In 1947, the U.S. Bureau of the Census combined years of schooling with self-reported reading and writing ability to identify "functional illiterates." Years of schooling quickly became the "proxy of choice" as a measure of functional literacy in both domestic and international literacy statistics, despite the fact that some individuals may learn to read through nonformal means, and

others may reach high school with minimal reading skills. This definition persists to the present, skewing statistics and distorting efforts at training and assessment (see Kirsch & Jungeblut, 1986; Levine, 1982; Wagner, in press).

Focusing on the economic implications of functional literacy, the Teheran Conference of 1965 described it as being "linked to a vocational training programme and encouraging the rapid growth of the individual's productivity" (quoted in Hamadache & Martin, 1986: 30). This conception formed the basis of the Experimental World Literacy Programme (EWLP), launched in 1967, which suggested that "reading and writing should lead not only to elementary general knowledge but to training for work, increased productivity, a greater participation in civil life and a better understanding of the surrounding world" (Unesco, 1976:10). In practice, however, the EWLP emphasized the connection between literacy and occupational training, and paid little attention to these latter, more general goals (see Levine, 1986).

Research from an ethnographic perspective has examined the functions, uses, meanings, and social distribution of literacy in diverse settings, and has found these features to vary across historical, cultural, and situational contexts (Heath, 1986; Schieffelin & Gilmore, 1986; Scribner & Cole, 1981). A number of researchers have noted substantial differences between the reading skills taught in school and the literacy demands encountered in out-of-school contexts; such findings underscore the inadequacy of grade-equivalencies and years-of-schooling as measures of functional literacy. Harman has argued that such inaccurate measures should be "supplanted by a clearly defined delineation of adult reading requisites and related functional goals," suggesting income tax forms, driving instructions, and job application forms as possible items "which could then become the articulated aim of literacy instruction" and assessment (Harman, 1970: 237).

Almost twenty years later, the National Assessment of Educational Progress (NAEP) conducted a survey which explored literacy skill levels among American young adults (aged 21-25). The survey followed a task-based approach similar to that recommended by Harman (1970), both in its assessment materials and in the recommendations generated by the study's findings (Kirsch & Jungeblut, 1986). Approximately 3600 young adults were presented with a series of tasks of varying complexity, some of which simulated everyday literacy activities. These latter tasks were specific to situations typically requiring literacy skills in the contemporary United States, such as reading a menu and filling out an application. Skills were measured and characterized in terms of three scales -- "prose literacy," "document literacy," and

"quantitative literacy." The final NAEP report concluded that out-of-school literacy "goes beyond traditional measures of reading comprehension" and includes a range of tasks which do not typically appear on standardized tests. The report also recommended that the current emphasis on narrative texts in literacy instruction may be insufficient preparation for the sorts of complex literacy tasks encountered in contemporary American life. The NAEP functional literacy assessment and a more conventional school-type assessment were substantially correlated ($r = .61$), however, suggesting an important proportion of shared variance across the two domains of literacy use.

The nature of functional literacy and its assessment, and the forms of training that might foster its development, have constituted a central issue faced by literacy planners and educators in the United States and abroad. In developing countries, where large portions of the adult population are unschooled and non-literate, and where the majority of individuals who go to school receive no more than a fifth-grade education, the functional literacy skills of children attending primary school take on particular importance. The present work examines this issue in a Moroccan case study.

Functional literacy in Morocco

The present research was undertaken as part of a larger project which explored the meanings and uses of literacy in contemporary Morocco, and the acquisition and maintenance of literacy skills among Moroccan children. Employing both longitudinal and cross-sectional designs, the project studied the development of children's Arabic literacy skills from the preschool years through primary school and beyond. The present paper focuses on the out-of-school (or household) literacy skills of children who had completed between three and six grades of primary schooling, and compares the predictors of household versus school-type literacy skills.

Our research differs from previous studies of functional literacy in a number of ways. While some work on the topic has focused on literacy skills for the workplace (Sticht, 1975; Mickulecky, 1982), the present study sampled everyday household literacy tasks. Second, while many studies have focused on adult readers (the NAEP study, for example, surveyed individuals over 20 years of age), the Morocco study assessed the literacy skills of youth 11 to 14 years of age, most of whom were still in school. Since their parents were for the most part unschooled and non-literate, these children were likely to be "literacy mediators" for their families' household literacy needs (Wagner, Messick, & Spratt,

1986). Third, the present study sought to understand household literacy among children with varying amounts of schooling, and in both urban and rural environments. While there has been speculation about the importance of the "literacy ecology" for the development of the individual's functional literacy skills, few empirical studies have assessed its impact. Finally, the study is the first to examine empirically the extent to which the prediction of household literacy differs from that of school-type literacy, and thereby to identify common and divergent factors in the development of the two skill areas.

The study was guided by two general research questions: (1) What kinds of household literacy tasks pose special difficulties for children of different ages and school experience? (2) What factors in the child's experience -- such as cognitive skills and factual knowledge, urban or rural environment, gender, parental education, socioeconomic status, and reading activities outside the classroom -- appear to support the development of household literacy skills, as compared to school-type literacy tasks?

Sample

Two cohorts of Moroccan school children comprised the sample for the present study. As shown in Table 1, the sample was divided about evenly by gender and environment (urban/rural). All children in the younger Cohort (Cohort 1; Table 1a) had spent five years in elementary school at the time of a household literacy assessment (see below), but due to grade repetition, children had achieved different grade levels (third, fourth, or fifth grade) in that period. A second, older group of children (Cohort 2; Table 1b) was drawn from the same urban and rural environments and schools as the children in Cohort 1. When assessed on household literacy, children within Cohort 2 differed in terms of the number of years spent in school (6 or 7 or more), the grade level achieved in that time (fifth or sixth grade), and whether they were currently attending school. The school dropouts in Cohort 2 had all reached fifth grade prior to leaving school, and had left school about six months before receiving the household literacy assessment./[1]

Insert Table 1 about here

Method

To examine children's literacy achievement in both household and classroom domains, a test of household literacy skills and a series of more conventional school-type reading tests were developed. Assessments of other cognitive skills were also made, and data concerning children's sociodemographic characteristics were gathered, to provide important background information. Each source of data is described below.

1. Household Literacy Assessment (HLA). Following the task-oriented notion of functional literacy discussed earlier, a "Household Literacy Assessment" instrument was designed. This instrument was composed of a series of tasks representing the sorts of literacy activities found in ethnographic observations to be commonly practiced in Moroccan households (Wagner, Messick, & Spratt, 1986). The HLA measured children's ability to make sense of the written features of four items: a letter, the front page of a Moroccan daily newspaper, an electricity bill, and a box of medicine. All materials used were authentic, modified only by the addition of a layer of clear plastic to prevent disintegration from handling (see Figure 1).

Insert Figure 1 about here

The HLA was conducted in the Fall of the school year, during the course of a longer, individually administered student interview (see below). While some students were assessed at school, the majority were assessed in their homes, where appointments had been scheduled in advance. Assessments were conducted by pairs of research assistants, one American and one Moroccan, in the quietest location afforded by the setting. If other family members were present during home assessments, the researchers explained that the child must be allowed to answer without assistance or prompting, and that any questions could be discussed when the interview was completed.

As each item on the HLA was presented, children were asked to identify the item, and then to respond to a number of additional questions about it (see Table 2). After completing the HLA, children were given the correct responses to the questions they had missed, as well as ways for finding such answers in the future (e.g., "We always put the recipient's address on the same side of the envelope as the stamp..."). Each child received a popular children's magazine upon completion of the interview.

Insert Table 2 about here

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2. School-based reading assessments. Children in the study also completed school curriculum-based assessments of Arabic reading ability. These assessments were derived from material in government-issued Moroccan primers, and included subtests of word-picture matching, sentence maze, and paragraph comprehension. (See Wagner & Spratt, 1987, in press, for more detailed descriptions of school-type reading tests.) While such assessments were made over several years of the study, only the scores obtained in the Spring immediately following the household literacy assessment are discussed in the present report, for the purpose of comparison with household literacy skills (see below).

3. Other cognitive assessments. Assessments were also made of children's short-term memory, concept identification, visual perception, and factual knowledge. Scores on the first three measures were combined into a single mean "cognitive" score; the "factual knowledge" score (based on twenty questions in four domains of content knowledge relevant to the Moroccan context) was retained as a separate score in all analyses. While multiple cognitive assessments were made over the years of the study, only the most recent scores prior to the household literacy assessment (Spring of year 3 of the study) were employed in the present analyses. (See Wagner & Spratt, 1987, for more detailed descriptions of cognitive assessments.)

4. Interview information. Structured interviews with parents (Cohort 1 only) and children (both Cohorts) were also conducted. These interviews elicited information about many background variables, including father's occupation (a measure of socioeconomic status) and the educational attainment of family members. Children's self-reports of literacy materials and activities available and practiced in the home were also gathered during the interviews. These reports included the number of books in the home, whether the child ever rented or exchanged books with friends, and whether the child engaged in reading and writing activities other than homework.

Results

Two principle analytic approaches were applied to the data. First, error analyses of individual items were made in order to examine variation in specific types of household reading knowledge and skill among children with different

school experience backgrounds. In addition, the reasoning strategies of a subsample of 205 children in Cohort 2 were recorded in detail, to aid in the interpretation of results.

Second, linear modeling techniques were employed to determine the contribution of demographic and experience variables to the prediction of household literacy and of school-type or classroom literacy. Predictor variables included cognitive level, factual knowledge, gender, age, self-reported literacy activity, urban or rural environment, parental educational level, and SES.[2] Grade level reached (both Cohorts) and school dropout status (Cohort 2 only) were also included as predictors, given our interest in estimating the contribution of these school experience variables to household and school-type literacy.

A. Item analysis of the HLA

Table 3 presents the percentage of correct responses on individual HLA questions for each Cohort by school experience, and chi-square statistics indicating contrasts in correct response rates across school experience groups within each Cohort. As expected, the simple identification questions (Q.1, Q.4, Q.9, and Q.12) had high rates of correct responses across all groups. The remaining ten questions, however, produced considerable differences in performance across sample groups. In general, children in the highest grade levels for each Cohort were more likely to give correct responses than other groups -- a difference that was statistically significant for seven out of the ten questions for each Cohort. This pattern of results suggests an important general relationship relationship between school experience and a broad range of household literacy skills. Specific outcomes on the four basic skill areas of the HLA are discussed below.

Insert Table 3 about here

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1. Conventional knowledge: "What goes where." Many household literacy tasks can be made easier by knowing not only how to decipher print but where to look for it. This knowledge of spatial print conventions, or "conventional knowledge," was useful for answering a number of questions on the HLA. One such question asked the child to indicate which of the two addresses on an envelope was that of the letter's recipient (Q.2). Following French postal tradition, the letter's destination is written in the center of the envelope, on the same side as the stamp, while the sender's address is

written across the backflap. Nothing about the addresses themselves differentiates the sender from the recipient; rather, it is their placement on the envelope which signals this difference. Overall, just under half of the children in Cohort 1 correctly answered this question. In Cohort 2, school dropouts were substantially less likely to respond correctly than children still in school, although this difference was not statistically significant. Furthermore, among the closely observed children from Cohort 2 (described above), 35 percent gave the sender's address when asked for that of the recipient. Thus, while nearly all children appeared to know that three lines of writing on an envelope were likely to constitute an address, many did not appear to know the postal conventions which signalled the recipient's address.

Performance on other HLA items also benefited from knowledge about "what goes where." In order to find the newspaper's date (Q.5) or the medicine's prescribed dosage (Q.14), knowing where to look for such information could make a child's search for the correct answer appreciably easier. Within the closely observed subsample, 22 percent could not find the newspaper's date, and 12 percent could not find the dosage instructions on the medicine box. This inability even to locate the appropriate information was likely to be responsible for the incorrect responses of many children. In the entire sample, only 36 percent of Cohort 1 and 67 percent of Cohort 2 gave the correct newspaper date, and 32 and 66 percent of Cohorts 1 and 2, respectively, responded with the correct medicine dosage. On both questions, significantly greater proportions of children of higher grade levels and non-dropout status gave correct responses (see Table 3).

The electricity bill (Q.9 to Q.11) provided a case in which decoding skills and knowledge of print conventions could be useful even without comprehension. When asked to state the name of the person billed (Q.10), computer-printed only in French, a child could obtain a correct answer without "understanding" French. First, to locate the information, the child could scan the bill in search of the Arabic label 'ism ("name") or, if familiar with the format of such bills, use knowledge about the conventional position of the billing name and address. If the child could decode the French letters, the name could then be recognized for what it was (a common Arabic name, transliterated into the French alphabet), without further knowledge of French language. This question proved to be one of the most difficult questions for Cohort 1, with only 7 percent correct responses overall, almost entirely supplied by fifth graders; 53 percent of Cohort 2, predominantly sixth graders, gave the correct answer.

The electricity bill also presented a large array of numbers, detailing such information as volume of electrical power used, unit costs, and amount billed. While these figures are labelled on the preprinted bill forms in both Arabic and French, the vocabulary items are specialized and typically unfamiliar to young readers. When children were asked to state the payment due (Q.11), many simply looked in the lower right-hand corner of the bill-- the conventional position of the billing amount-- and asserted that the figure printed there was the amount in question, without appearing to read the label above the numbers. Nonetheless, almost 90 percent of Cohort 1, and over 40 percent of Cohort 2 were unable to find and read this amount correctly. As described below, achieving a correct answer required knowledge of other print conventions as well.

2. **Monetary print conventions.** Familiarity with conventions which represent monetary amounts in print can also be important in performing household reading tasks. In Morocco, the numbers printed on stamps, bills, and money represent a system of currency based on the centime and the dirham (100 centimes = 1 dirham). In oral usage, however, it is common to speak in riyal-s (from Sp. real, "coin"; 20 riyals = 1 dirham), a traditional unit of currency in use in most areas of Morocco, or in francs (Fr.; 1 franc is typically equal to 1 centime). Thus, the amount of ten dirhams may also be referred to as "two hundred riyals" or "one thousand francs." This mixed numerical system often requires complicated on-the-spot currency conversions..

In order to read correctly the cost of the letter (Q.3) and the electricity billing amount (Q.11), a child had to know the conventions for representing prices in print. It was possible for children to answer Q.3 correctly because they were familiar with mailing letters, and knew that the cost of postage within Morocco was 80 centimes at the time. When a child answered correctly without looking at the stamp, therefore, the child was prompted with the questions, "How do you know? Where does it say so?" If no reference to the stamp was made, the response was counted wrong. While many subjects knew the cost of a letter, the low rate of fully correct responses on this question for both Cohorts (7 percent of Cohort 1; 39 percent of Cohort 2) appears to reflect a limited understanding of stamps. In addition, 5 percent of observed children volunteered the correct number on the stamp but gave the wrong denomination (riyals or dirhams instead of centimes).

On the electricity billing amount, similarly, a small number of observed children (5 percent) read the number correctly but provided the wrong denomination. Conversely, four children not only read the amount correctly in dirhams and centimes, but went on to convert this amount to riyals. These children were displaying a skill of special importance in the mediation of numeracy tasks within the family: translating a printed amount into the currency most familiar to the non-literate adult who would have to pay the bill.

3. Specialized vocabulary. The importance of familiarity with specific vocabulary items is illustrated by the medicine-box question referring to the types of ailments treated (Q.13). Five such ailments were listed on the box, in both Standard Arabic and French. Citing any one of these ailments in Moroccan Arabic was scored as a "correct" answer; however, 76 percent of Cohort 1 and 19 percent of Cohort 2 could not do so. For the subsample of closely observed children, unfamiliarity with the written terms was reflected both in faulty pronunciation of the (unvowelled) Standard Arabic words, and in an inability to demonstrate comprehension (by providing the Moroccan Arabic equivalent), even with proper decoding and pronunciation.

The newspaper headline (Q.7) and article (Q.8) also required knowledge of Standard Arabic terms which lacked close counterparts in Moroccan Arabic. A "correct" answer to each question required that students read the headline or article in Standard Arabic, then demonstrate comprehension by summarizing the information in Moroccan Arabic. Both Cohorts performed relatively well on these questions. Forty-five percent of Cohort 1 and 76 percent of Cohort 2 gave correct responses to Q.7; equivalent response figures for Q.8 were 59 and 89 percent for the two Cohorts. A significant positive relationship between grade level reached and correct response is evident for Cohort 1 on both questions; for Cohort 2, this relationship was statistically significant for Q.7 only.

4. Text in context. In addition to the sorts of linguistic knowledge and knowledge of print conventions discussed above, household literacy often requires an understanding of the larger context within which literacy tasks are embedded -- the relation of print to the world outside the text. The newspaper headline (Q.7) and article (Q.8) illustrate the role of such contextual knowledge. The headline read: "Lebanon lives (through) a chain of destruction and death." A correct answer required some mention of the war in Lebanon. Because the word "war" did not appear in the headline, children had to draw on their own knowledge of current world events to understand its reference. The short article, about an

airplane fire at Manchester Airport, required some knowledge of geography to avoid confusion about place names that might otherwise be unfamiliar (e.g., "London"; "northwest England").

The newspaper advertisement provided a combination of real-world reference and the formulaic, telegraphic conventions of advertising copy (Q.6). Children were asked to read the advertisement, in which a store's business hours were indicated as "9:00 a.m. to 8:00 p.m.", and then to state whether it was possible to shop at that store at 9:00 p.m. While few children had difficulty decoding the words of the advertisement, 74 percent of Cohort 1 and over 50 percent of Cohort 2 gave incorrect answers to the question. Closely observed children were asked the follow-up question, "How do you know?" While most children who had answered correctly made reference to the text of the advertisement, a few explained their answers without such reference, e.g., "No, because my parents won't let me out of the house after dark", as did most who had answered incorrectly, e.g., "Yes, if you need to buy something." Despite having decoded the text of the advertisement correctly, in other words, many children failed to apply the printed information to circumstances outside the text, responding instead from prior knowledge or concrete experience.

When asked about the medicine dosage (Q.14), similarly, a large number of observed children initially responded "one or two tablets in the morning and at night," without actually consulting the medicine box.All children were therefore also instructed to "see what it says" before their response was recorded. Of those who looked for, found, and even began to read the printed dosage, the majority failed to read beyond "one or two pills" to complete the dosage with "three times a day". Again, school attainment level was positively associated with the frequency of correct responses on this question.

In summary, the HLA questions described above sampled a variety of skills used in the performance of household literacy tasks. Results indicated that many individual questions were related to school experience, and that tasks involving non-textual, formulaic conventions were particularly difficult even for fifth graders.

B. The prediction of household and school-type literacy skills

We now turn to an analysis of background variables and their importance in the prediction of household and school-type literacy outcomes. Correlation matrices of key variables (Table 4) revealed strong positive correlations

between children's HLA scores and their school-type reading scores (Ar/Sch; Cohort 1, r = .572; Cohort 2, r = .435). Correlations were also substantial between HLA scores and a number of background variables, including factual knowledge (FACT), cognitive skills (COG), urban environment, male gender (Cohort 2 only), grade level reached (GRADE), and an index of self-reported literacy activity in the home (LITACT). Parental education (PARED), SES (as indicated by father's occupational level), and age were only modestly correlated with HLA scores. Table 4 also shows substantial correlations among a number of key independent variables (e.g., COG, FACT, GRADE, LITACT), underscoring the importance of a multivariate approach in the prediction of household literacy outcomes (see below).

Insert Table 4 about here

The results of linear modeling procedures are summarized in Table 5. For Cohort 1, the variables gender, age, parental education, and SES contributed little explained variance to the models of either household literacy (F (4,208) = 0.98, n.s.) or school-type literacy (F (4,208) = 1.18, n.s.), and were therefore removed from each model. The remaining five predictors produced strong models of both household and school-type literacy (36.2 percent and 52.8 percent total variance explained, respectively; $p < .001$). The standard beta weights of the five predictors indicate significant contributions of cognitive level, urban residence, level of literacy activities in the home, and grade level to both forms of literacy, with somewhat greater contributions of factual knowledge and urban environment to household literacy, and of cognitive level and grade level to school-type literacy (Table 5a).

Insert Table 5 about here

Linear regression models on older children (Cohort 2) indicated a more diversified array of predictors across the two forms of literacy. Again, parental education and SES variables explained no appreciable amount of variance for either household or school-type literacy (F (2,429) = 0.69, n.s., and F (2,429) = 0.78, n.s., respectively), and thus were removed from both models. The resulting eight-predictor models explained roughly similar amounts of variance in household and school-type literacy (31.7 percent and 35.0 percent, respectively, $p < .001$), although the sources of variance explained for each type of literacy differed considerably, as indicated in the standard beta weights of individual predictors (Table 5b). Cognitive level, factual knowledge, and grade level were significant predictors of both household

and school-type literacy for Cohort 2, but urban environment, male gender, and literacy activities were substantial predictors of household literacy only, and age and dropout status were important (negative) predictors of school-type literacy only. The negative influence of age may be understood in terms of increased grade repetitions in this Cohort, such that the variable AGE reflects not only chronological age but also grade failure resulting from poorer overall school performance.

In sum, household literacy and school-type literacy shared some important predictors (notably cognitive level and grade level), but they did not share all predictors. The relative importance of predictors differed across household and school-type literacy models. As a whole, the linear modeling results suggest that household and school-type literacy skills are differentially supported by particular features of the child's environment and behavior.

C. School attainment and household literacy

Given the importance typically attributed to school experience in fostering literacy skills, especially in low-literate settings, we also analyzed the specific contributions of grade level and school dropout to performance on household and school-type literacy tasks. While grade level achieved was a significant predictor of both types of literacy, its unique contribution when added last to the Cohort 1 model of school-type literacy was 10.5 percent, over twice as high as its contribution to household literacy (4 percent). For Cohort 2, while the unique contribution of grade level was about equivalent for household and school-type literacy (1 and 0.8 percent, respectively), school dropout contributed more than 2 percent to the variance in school-type literacy, but a negligible amount (0.2 percent) to household literacy. Thus, school experience factors of grade level (Cohort 1) and school dropout (Cohort 2) appear to be more important in the development of school-type reading skills than of household literacy skills.

Discussion

The findings of this study provide both general and specific information regarding the nature of household literacy and its relationship to other factors in the young reader's environment and experience. An analysis of individual HLA items illustrated some of the ways in which performance on several household reading tasks involves the

integration of various types of knowledge -- of print conventions, specialized vocabulary, and context -- with the text-based reading skills normally stressed in Moroccan schools. The results suggest that remaining in school and reaching higher grade levels support a variety of skills relevant to literacy tasks outside of school, although school experience appears to support certain skills more than others. For example, relatively high HLA performance was achieved on tasks involving prose text (Q.7, Q.8) -- tasks most closely resembling typical reading tasks encountered in Moroccan schools. On the other hand the large majority of children, even those with a fifth-grade education, were unable to perform tasks requiring knowledge of spatial, monetary, and telegraphic print conventions (Q.3, Q.6, Q.10, and Q.11) -- text features not often encountered in the classroom. The HLA item analysis also showed that reading as a means of acquiring information about the world was not a familiar goal for many children. Confirming this statistic, our observations suggest that in Moroccan bus stations, large post offices, and banks, for example, an individual is more likely to seek information by asking someone presumed to be more knowledgeable, rather than by consulting an informational sign or placard. Learning to seek information through literacy -- a key dimension of functional literacy -- is not an inevitable outcome of school learning; rather, it may require explicit instruction.

Given the substantial correlations found between school-type and household literacy skills for each Cohort, one might initially conclude that the two types of skills are not very distinct, and may be acquired by essentially the same cognitive and learning processes. Indeed, the results of linear modeling showed that both household literacy and school-type literacy are predicted by the child's cognitive level, factual knowledge of the world around him, level of literacy activity outside of school, and grade level reached in school. Regression analyses also showed, however, that a number of factors in the child's environment and experience do not contribute similarly to the two types of literacy. School attainment and dropout, for example, were more potent predictors of school-type than of household literacy. Conversely, urban environment, male gender, and more home literacy activities were more highly predictive of household literacy than school-type literacy (Cohort 2). The urban environment apparently provides more opportunities, and perhaps exerts more pressures, for the practice of a variety of reading skills outside of school. Newspapers and magazines are more readily available; billboards and street signs are more abundant; bureaucracies, and the paperwork demanded of their clients, are more plentiful than in the rural setting.

The finding that male gender was associated with higher household literacy performance in Cohort 2, despite equivalent performance by gender on school-type literacy, may be explained by girls' relative lack of opportunities for the practice of many everyday literacy skills. As they approach adolescence, Moroccan girls are more likely than boys to be constrained by traditional cultural restrictions in their exploration of the urban, literacy-rich street life. Moreover, in both urban and rural settings, traditional gender role expectations tend to result in boys being called upon more often than girls to perform literacy tasks such as reading bills and medicine prescriptions for other family members. Girls' observed propensity for book-reading may, on the other hand, allow them to maintain school-type literacy skills on a par with boys, and even to improve such skills after leaving school (see Wagner, Spratt, & Klein, in press).

The finding that neither parental education nor SES was substantially correlated with either household or school-type literacy skills may be a function of opposing factors in the Moroccan setting. While educated parents may provide a model of literate functioning which influences children's performance, families headed by nonschooled parents are more likely to depend on the literacy skills of their children, creating a practical motivation for the children to exercise such skills, and a context in which to do so.

Conclusion

The present research supports a growing body of evidence indicating that many of the literacy skills called for in everyday life may not be acquired even after several years of formal schooling. Although school experience and proficiency on school-type literacy tasks appear to be related to proficiency on household literacy tasks, such experience and proficiency explain only a portion of the variance in household literacy ability.

The large majority of the Moroccan students in our study are the first generation in their families ever to attend public schools. Given this great range in the intra-familial distribution of literacy skills, it is typical for children in the younger generation to act as "literacy mediators" for their families. In this way, literacy ability has contributed to a situation of shifting power dynamics within Moroccan families. Similar arguments have been made among other rapidly changing cultural groups, even within the United States (cf. Schieffelin & Cochran-Smith, 1984, on the Sino-Vietnamese). The presence of literacy mediators, who fill the gap between a semi- or non-literate person's abilities and

the requirements of particular tasks, is not new in Moroccan society, as literacy specialists of one type or another have been available for centuries (e.g., Quranic school teachers, public writers, notaries; Wagner et al., 1986). The newly-literate younger generation described here is now taking on many of the responsibilities of these traditional mediators of literacy, as well as performing new tasks related to the expansion of bureaucratic structures (e.g., post offices, banks, utilities, obligatory national identity cards and family documentation). The acquisition of functional literacy skills among these new mediators of literacy is thus increasingly important and needs to be much better understood.

The findings of the present research suggest that explicit formal instruction in everyday literacy tasks would be of particular value in settings of generally low parental literacy. In settings such as Morocco, females, rural dwellers, and others with few opportunities to practice reading skills outside of school appear to be at special risk of "functional illiteracy" even if they attend school, and even though they may be at little or no disadvantage with regard to school-type literacy skills. This finding suggests that such groups require special pedagogical attention if household literacy is to be achieved, not only to aid in the development of skills but also to provide tangible examples of the real-world functions of literacy in the child's environment.

The methods employed here demonstrate the value of combining qualitative and quantitative data to examine the types of tasks, skills, and knowledge involved in literacy's functions and uses in everyday settings. The present study also confirms that "functional literacy" is a term in serious need of increased specification, as the functionality of a given skill clearly depends on the particular contexts and purposes of its use. By recognizing and addressing the real-world contexts and purposes of reading and writing tasks, schools may be able to improve the transmission of literacy that is truly "functional" -- that is, meaningful, relevant, and useful for accomplishing the tasks of daily life.

NOTES

[1] Over the five years of the study, missing data and the attrition of subjects resulted in sample losses totalling 38 percent of Cohort 1 and 8 percent of Cohort 2. Chi-squares by region, gender, and attrition status indicated that for Cohort 1, attrition of urban males was somewhat greater than that of other groups ($x^2 = 7.26, p < .10$); Cohort 2 attrition was essentially equivalent across region and gender ($x^2 = 1.45$; n.s.). Results of t-tests on pre-attrition reading and cognitive scores between lost and retained subjects indicated significantly higher reading scores in the retained sample for both Cohorts (Cohort 1, $t = 2.43, p < .05$; Cohort 2, $t = 2.488, p < .05$), and cognitive scores for Cohort 2 ($t = 2.97, p < .01$). Thus attrition appears to have resulted in retained samples with somewhat higher school-type reading and cognitive (Cohort 2 only) skills than the original samples.

[2] In order to retain as many cases in linear regressions as possible in the face of randomly missing data points (affecting less than 5 percent of Cohort 1, and 2 percent of Cohort 2), missing values on a variable were replaced with the mean value of that variable among subjects of the same region and gender. Variables treated in this way included PARED, SES, AGE, and FACT; in no case was the procedure applied to a dependent variable.

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TABLE 1

DESCRIPTION OF THE SAMPLE

Table 1a. Cohort 1 (N = 218[a])

Environment:	Urban		Rural		
Gender:	**Boys**	**Girls**	**Boys**	**Girls**	**TOTAL**
School status at time of HLA[b]					
3rd grade	11	19	10	8	48
4th grade	21	23	23	27	94
5th grade	13	19	23	21	76

Table 1b. Cohort 2 (N = 453[c])

Environment:	Urban		Rural		
Gender:	**Boys**	**Girls**	**Boys**	**Girls**	**TOTAL**
School status at time of HLA					
5th grade	29	49	40	23	141
6th grade	103	60	36	45	244
Dropout	14	21	16	17	68

[a] N reflects attrition from an initial N of 350.
[b] HLA = Household Literacy Assessment (see text).
[c] N reflects attrition from an initial N of 492.

TABLE 2

HOUSEHOLD LITERACY ASSESSMENT INSTRUMENT

ITEM	QUESTIONS
Letter	Q.1 What is this?
	Q.2 Who was this letter sent to?
	Q.3 How much did it cost to send this letter?
Newspaper	Q.4 What is this?
	Q.5 What is the date of this paper?
	Q.6 Read this advertisement. Can you shop at this store at 9 p.m.?
	Q.7 Read this headline. What is it about, in your own words?
	Q.8 Read this short article. What is it about, in your own words?
Electricity bill	Q.9 What is this?
	Q.10 Whose bill is this? In other words, who has to pay?
	Q.11 How much does he have to pay?
Medicine box	Q.12 What is this?
	Q.13 What are some of the ailments that this medicine treats?
	Q.14 How many pills does it say an adult should take per day?

TABLE 3

PERCENT CORRECT FREQUENCIES AND CHI-SQUARE RESULTS ON INDIVIDUAL HLA QUESTIONS BY SCHOOL EXPERIENCE WITHIN EACH COHORT

QUESTION	COHORT 1 (N=218)				COHORT 2 (N=453)			
	3rd (48)	4th (94)	5th (76)	x^2	Dropout (68)	5th (141)	6th (244)	x^2
Letter								
Q.1	97.9	97.9	100.0	---[a]	100.0	100.0	99.6	---
Q.2	56.3	43.6	47.4	2.04	54.4	69.5	65.2	4.60
Q.3	4.2	6.4	10.5	1.97	30.9	33.3	45.5	8.02*
Newspaper								
Q.4	85.4	95.7	93.4	---	97.1	95.0	97.1	---
Q.5	27.1	27.7	52.6	13.57***	57.4	61.0	73.8	10.25**
Q.6	22.9	22.3	32.9	2.76	32.4	37.6	60.9	28.14***
Q.7	29.2	44.7	55.3	8.10*	51.5	75.2	82.8	28.40***
Q.8	29.2	57.5	79.0	30.19***	82.4	86.5	91.8	5.76
Electricity bill								
Q.9	89.6	94.7	94.7	---	97.1	97.9	98.4	---
Q.10	0.0	1.1	19.7	26.42***	30.9	39.0	67.2	44.22***
Q.11	2.1	9.6	17.1	7.21*	47.1	46.4	67.1	19.16***
Medicine box								
Q.12	85.4	92.6	96.1	---	100.0	97.2	100.0	---
Q.13	0.0	21.3	42.1	29.32***	75.0	77.3	84.8	5.18
Q.14	8.3	33.0	46.1	19.26***	63.2	54.6	72.5	12.92**

[a] Simple identification questions (Q.1, Q.4, Q.9, Q.12) had extremely small cell N's (N < 5) for incorrect responses; chi-square results are therefore suspect and are not reported.

TABLE 4

CORRELATION MATRIX OF KEY VARIABLES

Table 4a. Cohort 1 (N=218)

	1	2	3	4	5	6	7	8	9	10
1 HLA[a]										
2 AR/Sch	.572[b]									
3 COG	.464	.571								
4 FACT	.414	.423	.487							
5 URBAN	.285	.188	.216	.243						
6 MALE	.074	.051	.093	.030	-.076					
7 GRADE	.412	.598	.418	.273	-.143	.025				
8 LITACT	.395	.480	.333	.317	.095	.094	.477			
9 PARED	.121	.115	.055	.054	.255	-.014	.101	.167		
10 SES	.142	.105	.129	.163	.116	-.113	.132	.181	.283	
11 AGE	-.203	-.186	-.063	-.047	-.271	.005	-.052	-.137	-.205	-.128

Table 4b. Cohort 2 (N=453)[c]

	1	2	3	4	5	6	7	8	9	10	11
1 HLA											
2 AR/Sch	.435[d]										
3 COG	.335	.364									
4 FACT	.436	.437	.270								
5 URBAN	.278	.140	.168	.078							
6 MALE	.226	.129	.230	.206	.009						
7 DROPOUT	-.226	-.404	-.191	-.231	-.081	-.071					
8 GRADE	.351	.395	.273	.441	.130	.096	-.454				
9 LITACT	.299	.239	.159	.269	.085	.084	-.239	.210			
10 PARED	.041	.069	.055	.052	.108	-.036	-.077	.105	.121		
11 SES	.120	.129	.035	.070	.316	-.022	-.117	.160	.064	.345	
12 AGE	-.138	-.236	-.046	-.050	-.117	-.046	.416	-.046	-.169	-.198	-.186

[a] Please note abbreviations as follows: HLA = Household Literacy Assessment; AR/Sch = School-type reading score; COG = Cognitive level; FACT = factual knowledge; URBAN = Urban residence; MALE = Male gender; GRADE = Grade level reached; LITACT = number of self-reported literacy activities in the home; PARED = level of parents' education; SES = Socioeconomic status; AGE = child's age at time of HLA, DROPOUT = School dropout after grade 5.

[b] For N=200, $p < .05$ if $r > .138$; $p < .01$ if $r > .181$.

[c] Due to missing data, all correlations for Cohort 2 which involve AR/Sch are based on a pairwise N of 440.

[d] For N=400, $p < .05$ if $r > .098$; $p < .01$ if $r > .128$.

TABLE 5

PREDICTORS OF HOUSEHOLD AND SCHOOL-TYPE LITERACY SKILLS

Table 5a. Cohort 1 (N=218)	Household literacy model	School-type literacy model
Predictors (standard coefficients)		
COG[a]	.185**	.271***
FACT	.152*	.095
LITACT	.139*	.150**
URBAN	.232***	.151*
GRADE	.260***	.408***
Adjusted squared multiple R:	.362***	.528***
F (5,212)	25.68	49.63

Table 5b. Cohort 2 (N=440)[b]	Household literacy model	School-type literacy model
Predictors (standard coefficients)		
COG	.146***	.207***
FACT	.244***	.268***
LITACT	.144***	.055
URBAN	.189***	.023
MALE	.111**	.000
AGE	-.059	-.121**
GRADE	.134**	.120*
DROPOUT	-.017	-.191***
Adjusted squared multiple R:	.317**	.350***
F (8,431)	26.52	30.59

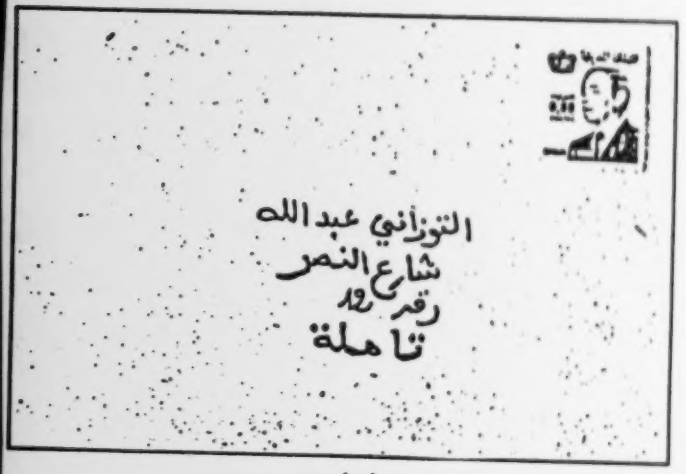
Note: * $p<.05$ ** $p<.01$ ***$p<.001$.

[a] Please note abbreviations as follows: COG = Cognitive level; FACT = factual knowledge; LITACT = number of self-reported literacy activities in the home; URBAN = Urban residence; GRADE = Grade level reached; MALE = Male gender; AGE = child's age at time of HLA; DROPOUT = School dropout after grade 5.

[b] Reduced N is due to missing values on school literacy.

figure caption

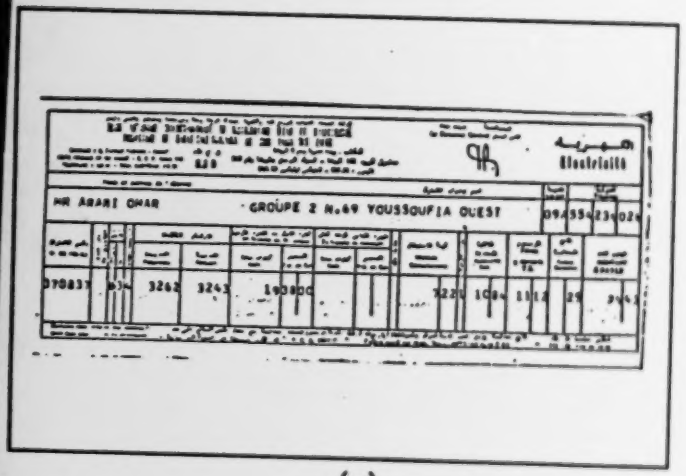
Figure 1. Household Literacy Assessment (HLA) items: (a) letter; (b) newspaper; (c) electricity bill; (d) medicine box.


التوزاني عبد الله
شارع النصر
رقم 12
تاهلة

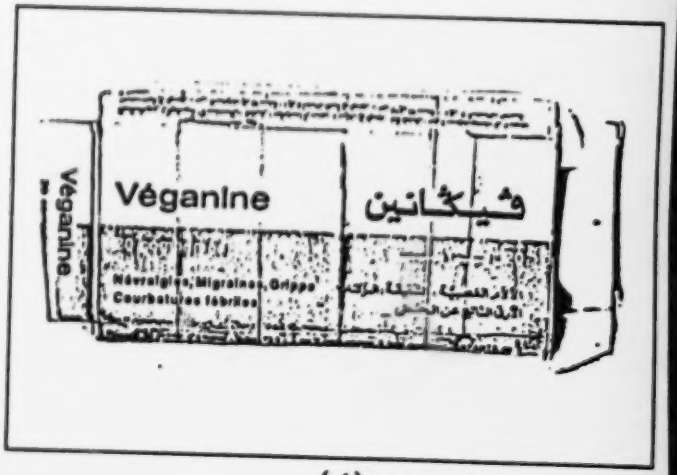
(a)

المتجر والمطعم
التوقيت الجديد :
من 30ر9 صباحا الى 8 مساء بدون توقف
كل يوم ماعدا الاحد
لبنان يعيش مسلسل الدمار والموت

(b)


Electricité
HR ARARI OMAR
GROUPE 2 N.69 YOUSSOUFIA OUEST

(c)


Véganine
فيكانين
Névralgies, Migraines, Grippe
Courbatures fébriles

(d)